

Almost a Tandy Model 100 for \$150 Kyotronic KC-85

by Luft Pfeiff

*A Tandy 100 clone at
a bargain price.*

The advertisement by D. L. Liquidators in *Computer Shopper* seemed almost too good to be true and, as such things go, there were some catches. Even with these, however, this Tandy 100 clone is a great bargain for the right buyers.

The line drawing in the advertisement was of a PICO that looked so much like the Kyocera family (Tandy 100/102, NEC-8201) that I almost didn't believe it. The keyboard and right side seemed identical to the Model 100, but the LCD was sloped upward a bit. The "Liquidation Price \$149.95" in red caught my eye. The "Suggested Retail \$599.95" I took with a grain of salt. Then I checked the fine print. Built-in BASIC, TEXT and TELCOM, but no mention of ADDRSS and SCHEDL. Then came the rest of the list: RS-232-C, 80C85, etc., etc.; all familiar but no mention of a modem. Hmmm, sounds more like the NEC-8201 than a Tandy 100.

The table of "optional extras" had RAM expansions at \$24.95 (not bad) and three cables (printer, RS-232-C to modem, RS-232-C to computer) at \$19.95 each (pretty steep I thought). The AC adapter was a normal \$5.95, but the shipping seemed high at \$18.

A couple of phone calls and conversations with three people brought it all into focus. This is a Kyocera machine, not meant for the US market. Only 1500 were imported from Hong Kong. Fortunately, each will be given a warranty for 90 days (same as you get with the Tandy machines). A technical manual is available for \$20 and, yes, I could have a 32K unit on approval for 45 days so I could review it. It arrived the next day. So here is what else I now know about it (throughout this review I am assuming that most readers are familiar with the TRS-80 Model 100 or NEC-8201).

EXTERIOR

The first thing you notice is that the display panel area is sloped upward 7.5



The KC-85 not only looks a lot like the Tandy 100, its ROM and connectors closely match Tandy's popular laptop.

degrees from just above the function keys. After using it alongside my NEC-8201 and Tandy 102 I don't see any particular advantage to this and it makes the computer thicker at the rear than a Model 100. The background screen color is about the same metallic yellowish-green as in the NEC-8201 and somewhat darker than the more neutral color of the Tandy 102. Readability is as good as in the others with their large, plain characters on the 40 column, 8 row screen. The KC-85's character font is the same as the NEC-8201 rather than that of the Tandy's, but it has all of the Tandy graphic characters in the high ASCII codes. It addresses them with the same keyboard inputs using GRPH, CODE and SHIFT keys. It also has the NUM key and imbedded keypad. Obviously not a NEC although it is a single color beige and the keys are light in color, this time a uniform gray. The LCD cover glass extends to the right over the area where the "Battery Low" light is.

Other similarities to Tandy/Radio Shack

units in location and design are the switches and ports. On the back, the RS-232-C port is hampered as in the Tandy 100, not accepting clamp-together connector covers. This is fairly easily corrected by modifying the covers, but an annoyance nonetheless. The printer port is identical, the modem port cutout is covered from inside, and the cassette port appears the same but is not. It requires the unique included cable and uses the MIC port rather than AUX on the recorder, which I think is an advantage. It uses the Tandy 100 tape format, not the NEC-8201 format. On the left side there are hints in the plastic of modem switch locations and a wand port but these are not implemented. The battery compartment, I/O Bus Extension Port, Option ROM socket and back-up battery switch are located on the bottom.

OF MODEMS AND ELECTRONICS

Certainly some users really need a built-in modem, but 300 baud is now old hat, so

the Tandy 100/102 leave something to be desired. All three of the Kyocera machines I have here run my 1200 baud modem just fine using *TELCOM*. Then again, *Pico* is selling 300 baud units at \$27.95 right now, and other affordable ones can be found.

Inspection of the photos, drawings, circuit diagrams and printed circuit board layouts in the hardware-only, somewhat disappointing Service Manual was enough to convince me that it was unnecessary to take the thing apart. The Printed Circuit Board (PCB) layout is quite different from the Tandy 100, but those electronics that are included seem to be identical.

There is provision on the PCB board for the wand port and associated components; I suppose a hardware hacker could copy the Tandy 100 installation and activate the wand port (the supporting code seems to be in place in *ROM* but I can't guarantee that it will work properly).

THE ROM

How about that *ROM*? This is the key to the usefulness of the unit. As you might expect, there is both good and bad news. My first look made it obvious that it contained Tandy 100 code which had been modified to excise everything that supported the modem.

Tandy 100 Clone: "Liquidation Price \$149.95"

It would have been nice if that code had just been nulled and minor adjustments made to function keys and the like. Instead, it appears that the source code was worked over and then reassembled. All new *ROM* addresses!

Fortunately, unlike the NEC-8201 *ROM*, the remaining code closely follows the original order in the Tandy 100/102, everything is just shifted downward by varying amounts.

There is one interesting undocumented surprise: while not on the Main Menu, *ADDRSS* and *SCHEDL* code can be put to work by running short *BASIC* programs: *0 CALL 22643* calls the Address program code, and *0 CALL 22650* calls the Schedule program code into operation. These expect *ADRS.DO* and *NOTE.DO* just as they do in the Tandy 100/102.

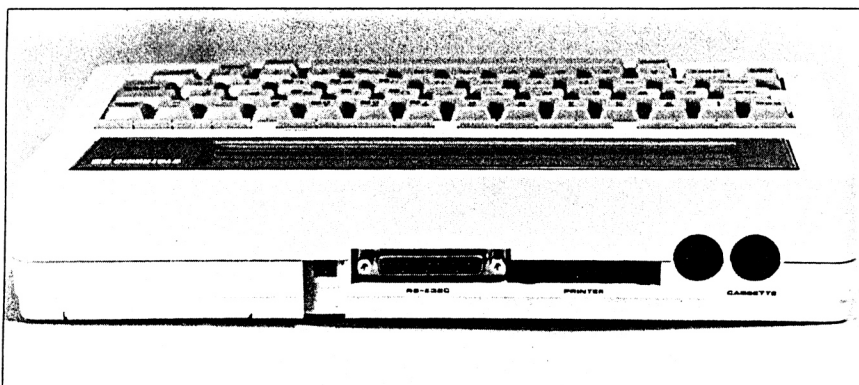


Photo 2. While the KC-85 backplate looks the same as the Tandy-100, you'll note that the punch-out for the modem is filled with a plastic plug.

ADDRESSES

As in the *ROM*, almost all system *Reserved RAM* addresses (the locations above 62960 that are used by the operating system to track such information as cursor screen position, *TELCOM* parameters, etc.) are different in the two computers.

Unfortunately, none of the addresses are documented in the materials supplied or available with the machine. After poking and peeking around a little (see last month's *Programs Programs* column for more information on how to do that sort of thing), I came up with some sample addresses that serve to indicate the extent of address offsets of the KC-85 from the Tandy 100/102 (Figure 1).

The primary documentation consists of two easy-to-carry 6 by 8 inch paperback manuals: *User's Guide* and *BASIC Reference*. Both are well written and cover all normal usage. The *User's Guide* has many examples of a tutorial nature for the beginning user. An errata sheet was included for

a minor printer's error, there seem to be few others.

BUY ONE?

I expect to purchase the one I have. It will serve as a dedicated PICO in my darkroom and studio, loaded with all those photographic programs. It will free-up a bank of my NEC's Sidecar and always be at-the-ready. People who make extensive use of machine language programs, *PEEKs/POKEs* programs, or Option *ROMs* may not like it at any price.

Based on my experiences with them, I am satisfied that D. L. LIQUIDATORS is a reputable dealer.

Manufacturer's Specifications

D. L. LIQUIDATORS
1970 S. West St. Suite 315
Wichita, KS 67213
1-800-255-1382 Ext 136

ROM	Tandy	KC-85	Offset
Up to location	918	918	0
FILES	7994	7943	-51
CLS	16945	16909	-36
Devices	20721	20640	-81
TELCOM	20806	20721	-85
TERM	21589	20877	-712
ADRS	23400	22643	-757
SCHDL	23407	22650	-757
TEXT	24046	23286	-760
MaxROM	32767	31949	-818
SysRAM	62960	62960	0

Figure 1. *ROM* address differences between the Tandy Model 100 and the KC-85.